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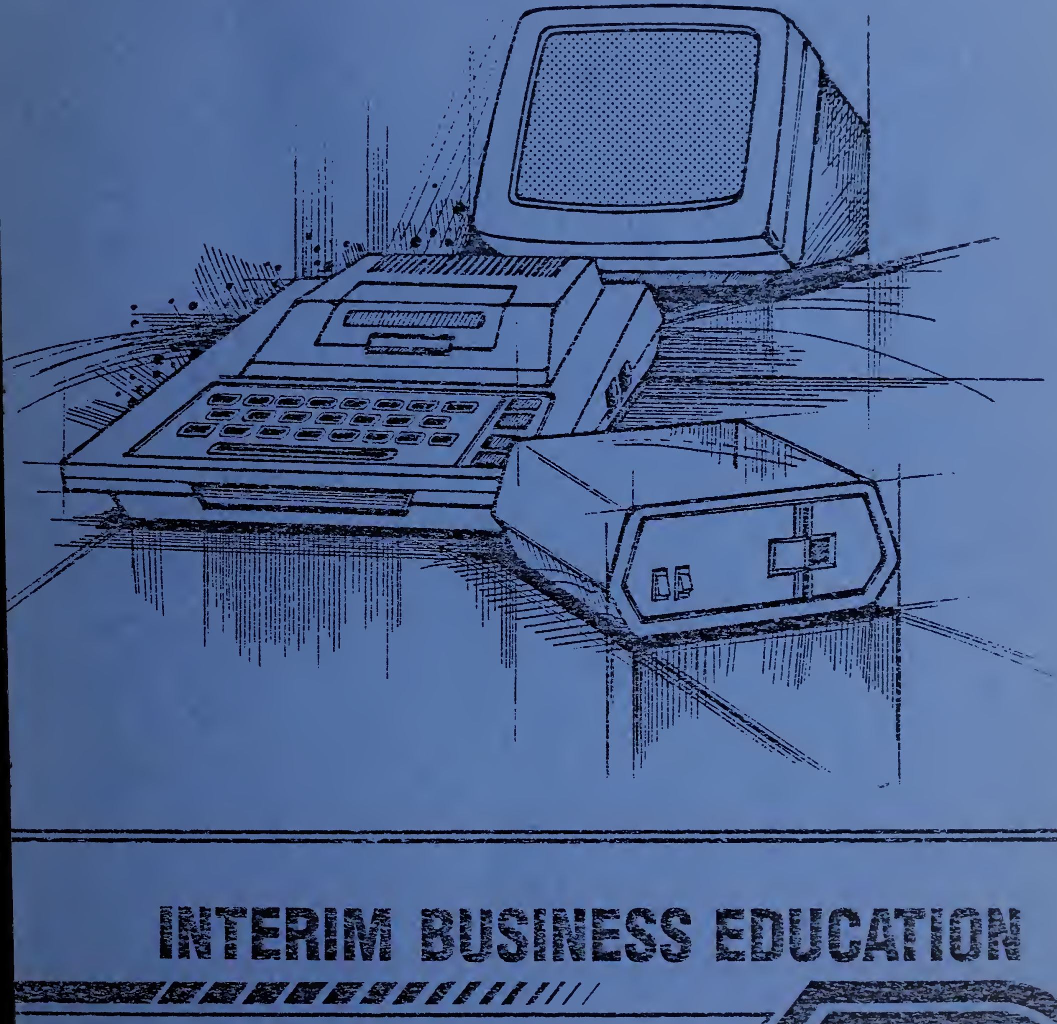

INTERIM BUSINESS EDUCATION

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COMPUTER PROCESSING CURRICULUM GUIDE (Interim)

ACKNOWLEDGEMENTS

Alberta Education acknowledges with appreciation the contribution of the following Ad Hoc Committee members to the preparation of this curriculum guide.

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NOTE: This is an interim curriculum guide available for the optional implementation year, 1983-84. Mandatory implementation of the program is September, 1984.

This Curriculum Guide is a service publication only. The Senior High School Program of Studies contains the official statement concerning Senior High School courses. The information contained in the guide is prescriptive insofar as it duplicates that contained in the Program of Studies. There are in the Guide, however, as well as content, methods of developing the concepts, suggestions for the use of teaching aids and lists of additional reference books.

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PHILOSOPHY OF BUSINESS EDUCATION PROGRAM

Business Education is an interdisciplinary study of the principles, procedures and technologies within the business environment and thus plays a significant role in meeting the Goals of Schooling and Goals of Education in Alberta Schools. Within the program the student has an opportunity to learn more about his role as a future participant within a productive society and to build a framework for a successful career. The knowledge, skills, attitudes and habits expected in business are established in the classroom and assist students, upon graduation, to respond to the opportunities and expectations of the world of work.

The development of the individual's potential in the areas of psychomotor, affective and cognitive domains is central to learning and instruction. Individuals discover themselves and realize their potential by interacting with ideas, technology and people. The world of business is an appropriate focus for this interaction.

Presented from the dual viewpoint of the individual as a consumer within the marketplace and a participant within the production cycle, the content within the Business Education Program provides for development of:

1. Skills and knowledge all citizens need to successfully participate in the business world,

2. Skills for immediate job entry, and

3. Skills and knowledge supportive of a business-related post-secondary program.

The continuum of experiences within the business education program start with exploratory activities in junior high school and expand in scope and depth at the high school level. The program can meet the three general objectives while providing viable alternatives and challenge for students of all levels of ability and interests. The relevance of the program is further enhanced through the integration of technology and related practices throughout the program, helping prepare the student for the electronic age.

SPECIFIC OBJECTIVES OF THE ALBERTA BUSINESS EDUCATION PROGRAM

Senior High School

The business education curriculum provides education ABOUT business for ALL students in order that they become informed citizens, and education FOR business for SOME students in order that they become effective workers. More specifically, the purpose of the program is:

1.1 To provide a meaningful study of the business environment including the ideas, people, and technology of business.

1.2 To provide for the development and acquisition of business knowledge and skills which will be most useful and durable in a rapidly changing society.

1.3 To provide an opportunity for students to elect and pursue individual interests and specialization in the study of the business environment.

1.4 To develop acceptable communication and interpersonal skills.

1.5 To develop the thinking strategies and problem-solving abilities of students.

1.6 To provide an opportunity for students to relate and apply learnings in business education to other areas of study.

1.7 To expose students to the vast laboratory of business for the purpose of acquiring information, gaining experience and testing ideas and hypotheses.

1.8 To provide for a general understanding of business and the development of skills for personal-use.

1.9 To provide background skills and knowledge for specialization in business and or admission to post-secondary programs.

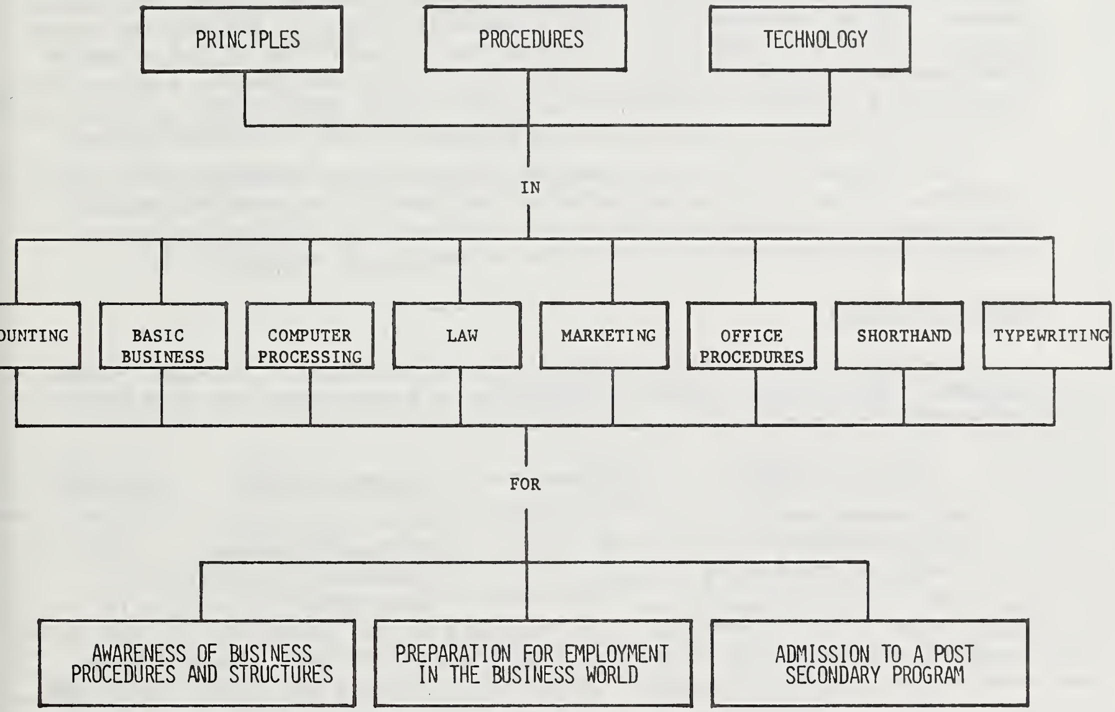
1.10 To prepare for job entry upon completion of high school and for future advancement in business.

SCHEMATIC OVERVIEW

OF

BUSINESS EDUCATION HIGH SCHOOL PROGRAM

A STUDY OF BUSINESS


PRINCIPLES
PROCEDURES
TECHNOLOGY
IN
OUNTING
BASIC BUSINESS
COMPUTER PROCESSING
LAW
MARKETING
OFFICE PROCEDURES
SHORTHAND
TYPEWRITING
FOR
AWARENESS OF BUSINESS PROCEDURES AND STRUCTURES
PREPARATION FOR EMPLOYMENT IN THE BUSINESS WORLD
ADMISSION TO A POST SECONDARY PROGRAM

GUIDELINES FOR COURSE PLANNING

General Guidelines

The content for the business education program has been organized into modules which require 25 hours of instruction time. These modules are to be formatted into 3 or 5 credit courses at the grade 10, 11 and/or 12 level. Each school or school jurisdiction will determine the level at which the courses will be offered and the modules therein.

Modules are designated as core or elective. Elective modules may only be selected if students have completed the core modules within the subject strand. If two or more levels are offered in a subject strand, the course which includes the core modules becomes the prerequisite to the advanced level courses. Certain modules have additional prerequisites and some have requirements related to equipment support. These constraints are indicated in the Junior-Senior High School Handbook and/or the curriculum guides.

The program to be offered should be established through consultation of teaching, guidance, and administrative personnel. In order to promote consistency and establish appropriate standards for student evaluation jurisdictions may wish to monitor the sequencing of modules.

Subject Strands

The high school business education program consists of eight subject strands. The maximum credits available to a student for use on a high school diploma are:

Subject Strand	Credits	Subject Strand	Credits
Accounting	13	Marketing	10
Basic Business	10	Office Procedures	10
Computer Processing	15	Shorthand	10
Law	10	Typewriting	15

Schools may offer courses of 3 or 5 credits at the grade 10, 11, and/or 12 level by selecting 3 or 5 modules from the subject area strand. Total credits available to a subject strand cannot exceed the number specified.

A subject course may be enhanced by selecting a module or modules from the "optional" strand that supports the intent of the subject area. Not more than one optional module may be included at each grade level in a 3-credit course, and not more than two optional modules may be included at each grade level in a 5-credit course. The Business Research Module and the Business Simulation Module may, however, be used once in each subject strand provided that the topic is not duplicated.

Business Education 10, 20, and 30

In addition to the courses designated under the subject strands, up to 10 credits may be offered in each of Business Education 10, 20 and 30 to a maximum of 30 credits. Business Education 10, 20, or 30 courses may be created by selecting a number of modules from the "optional" column as well as from the subject strands. Elective modules from the subject strands may only be selected if students have taken the core modules identified in the subject strands.

BUSINESS EDUCATION MATRIX

(15)* TYPEWRITING	(10)* SHORTHAND	(10)* OFFICE PROCEDURES	(10)* BASIC BUSINESS
C 1. Keyboarding	C 1. Shorthand Theory 1	C 1. Structure of the Business Office	C 1. Canadian Business
C 2. Keyboarding, Centering and Tabulation	C 2. Shorthand Theory 2	E 2. Personnel in the Business Office	C 2. Personal Financial Planning
C 3. Letters & Essays	C 3. Shorthand Theory 3	E 3. Business Communication	E 3. Small Business Management I
C 4. Reports	E 4. Shorthand Theory, Dictation & Transcription 1	E 4. Records Management	E 4. Economic Concepts
C 5. Letters & Tables	E 5. Shorthand Theory, Dictation & Transcription 2	E 5. Information Processing	E 5. Consumer Credit
C 6. Manuscripts	E 6. Speed & Transcription Skill Building 1	E 6. Clerical Routines	E 6. Management Techniques
C 7. Tables, Business Forms, & Financial Reports	E 7. Speed & Transcription Skill Building 2	E 7. Secretarial Routines	E 7. Insurance
C 8. Business Correspondence	E 8. Speed & Transcription Skill Building 3	E 8. Office Specialties I	E 8. Small Business Management II (Simulation)
E 9. Specialized Production Applications	E 9. Speed & Transcription Skill Building 4	E 9. Office Specialties II	
E 10. Production Projects & Review	E 10. Speed & Transcription Skill Building 5	E 10. Office Simulation	
E 11. Professional Applications I			
E 12. Professional Applications II			
E 13. Simulation I			
E 14. Simulation II			

(10)* LAW	(13)* ACCOUNTING	(10)* MARKETING	(15)* COMPUTER PROCESSING	(30) OPTIONAL BUSINESS EDUCATION 10, 20, 30
ure of Law and the il Law System	C 1. Basic Accounting Concepts	C 1. World of Marketing	C 1. Introduction to Computers	E 1. Business Communication - Development
tract Law	C 2. Journalizing and Posting	E 2. Marketing Research	C 1a. Overview of Intro. Programming Language	E 2. Business Communication - Practice
minal Justice System	C 3. Completing the Accounting Cycle	E 3. Distribution of Goods and Services	C 2. Computers and Society	E 3. Business Communication - Integration
ic Rights and ponsibilities	C 4. Merchandise Accounting	E 4. Purchasing & Controlling Merchandise	C 3. Program Design	E 4. Business Calculation 1
t Law	C 5. End-of-Year Adjustments & 8-Column Worksheets	E 5. Advertising and Sales Promotion	E 4. Overview of Software	E 5. Business Calculation 2
sumer Law	E 6. Optional Accounting Tasks	E 6. Salesmanship	E 5. Applications: Data Entry	E 6. Business Calculation 3
our Law	E 7. Voucher System and End-of-Year Adjust.	E 7. Display	E 6. Applications: Word Processing	E 7. Record Keeping 1
ily Law	E 8. Departmentalized Accounting	E 8. Pricing and Financial Activities	E 7. Applications: Simulations	E 8. Record Keeping 2
perty Law	E 9. Partnership and Corporation Accounting	E 9. Research Module	E 8. Fundamentals of Input/Output	E 9. Record Keeping 3
troversial Issues	E 10. Cost Accounting		E 9. Introduction to Advanced Computer Program. Techniques	E 10. Business Research Project
earch Module	E 11. Financial Analysis		E 10. Advanced Computer Program. Techniques	E 11. Goal Setting and Career Development
	E 12. Accounting Simulation I		E 11. Extended Programming Project	E 12. Dicta Typing 1
	E 13. Accounting Simulation II: Computerized Accounting		E 12. Graphics	E 13. Dicta Typing 2
			E 13. Systems Analysis and Program Development	E 14. Word Processing 1
			E 14. Intro. to Second (High Level) Programming Language	E 15. Word Processing 2
			E 15. Applications in Second (High Level) Programming Language	E 16. Business Simulation
			E 16. Extended Project in Second (High Level) Language	
			E 17. Machine/Assembly Language	

aximum credits available.

modules are prerequisite to elective modules

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ALBERTA EDUCATION PUBLICATIONS

The following service publications and prescriptive documents are available from Alberta Education to administrators and business education teachers.

From Curriculum Branch, Program Development Division

1. Program of Studies
2. Junior-Senior High School Handbook
3. Accounting 10-20-30 Curriculum Guide (Interim)
4. Basic Business 10-20-30 (Interim)
5. Computer Processing 10-20-30 (Interim)
6. Law 10-20-30 (Interim)
7. Marketing 10-20-30 (Interim)
8. Office Procedures 10-20-30 (Interim)
9. Shorthand 10-20-30 (Interim)
10. Typewriting 10-20-30 (Interim)
11. Optional (Business Education 10-20-30) (Interim)
12. Junior High School Typewriting Curriculum Guide, 1973
13. Draft Junior High School Option Curriculum Guide

From School Book Branch

1. School Branch Catalog
2. Implementing Computer Literacy Programs in Schools (Section 3)

For further information, contact Curriculum Branch, (Program Development Division), Edmonton or Calgary Regional Offices, (Program Delivery Division)

COMPUTER PROCESSING 10
COMPUTER PROCESSING 20
COMPUTER PROCESSING 30

Introduction to Computer Processing

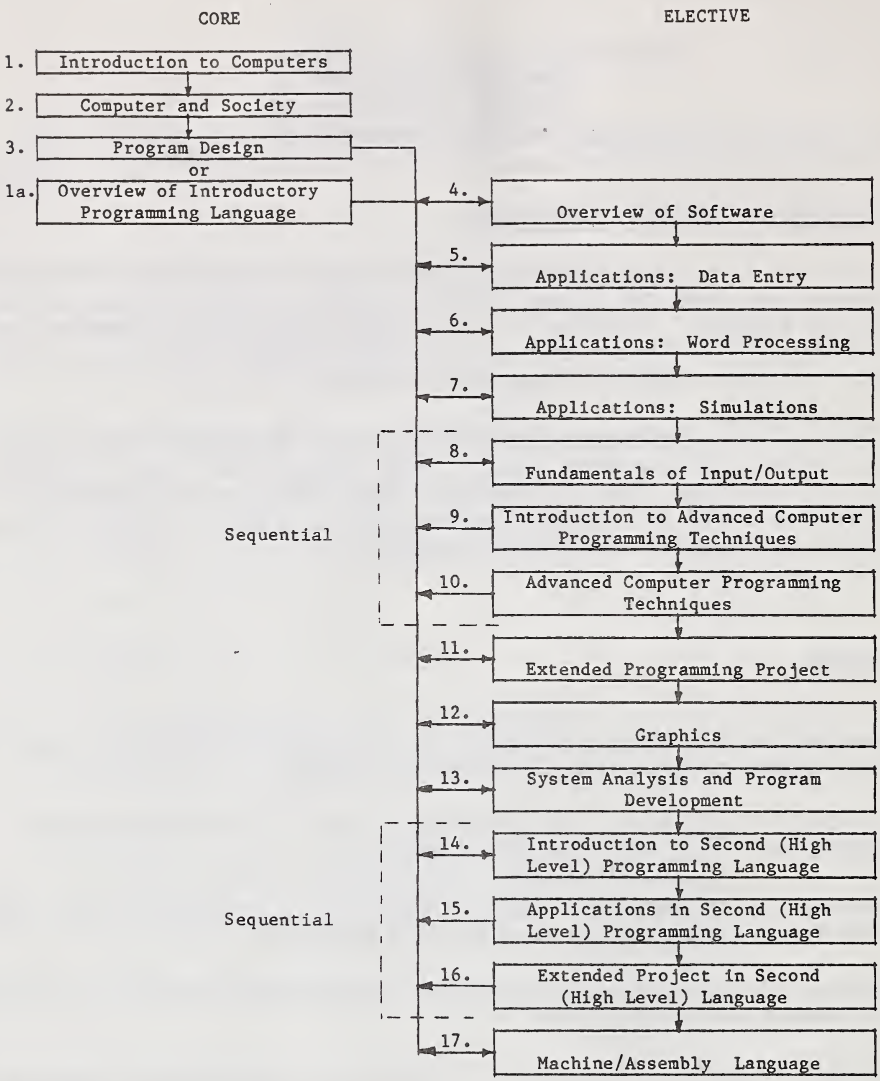
Computer Processing is designed to provide all students with an opportunity to study the impact of the computer on the business world and society as a whole. Programming and software manipulation should provide the student with an opportunity to personally direct the power of the computer to solve simple to complex problems.

The emphasis in Computer Processing is on the significance of the computer within the business world. Some students will want to develop skills and knowledge that will support their career plans, provide a suitable background for further post-secondary study or provide the basic skills for the personal use of the computer.

Objectives:

1. Examine the fundamental terminology, equipment, procedures, and concepts used in the computerized business environment.
2. Develop the ability to use the computer to help solve problems, manipulate data, and recognize differences.
3. Examine the potential of computers in the business world and relate the computer's impact to the society as a whole.
4. Become adept at the manipulation of hardware and software as preparation for career or personal use.
5. Develop expertise in efficient programming techniques and program design.
6. Become aware of the potential of the communicating functions of the computer within the business environment.
7. Develop an appreciation of the impact computers have had on productivity and career paths within the business environment.

FLOWCHART OF MODULES WITHIN COMPUTER PROCESSING SUBJECT STRAND


CORE
ELECTIVE
1. Introduction to Computers
2. Computer and Society
3. Program Design
or
1a. Overview of Introductory Programming Language
4. Overview of Software
5. Applications: Data Entry
6. Applications: Word Processing
7. Applications: Simulations
8. Fundamentals of Input/Output
9. Introduction to Advanced Computer Programming Techniques
10. Advanced Computer Programming Techniques
11. Extended Programming Project
12. Graphics
13. System Analysis and Program Development
14. Introduction to Second (High Level) Programming Language
15. Applications in Second (High Level) Programming Language
16. Extended Project in Second (High Level) Language
17. Machine/Assembly Language
Sequential
Sequential

Notes on Course Implementation

Computer Processing has 17 modules, 3 core and 14 elective. Courses of 3 or 5 credits (3 or 5 modules) may be developed at the 10, 20 and 30 level to a maximum of 15 credits. Courses will need to be scheduled in a properly-equipped computer lab. The recommended minimum students to machine ratio is two students for one machine.

Modules 1-3 introduce basic programming within the context of societal and personal implications. Modules 4-7 integrate software. Programming is continued in Modules 8-11 and second-language programming in Modules 14-16. Modules 12, 13, and 17 introduce specialized aspects of computer processing.

Modules from the Optional strand may be integrated into Computer Processing if not used previously within a student's program. It is recommended that a choice be made from the following Optional modules:

Module No.	10.	Business Research Project
	11.	Goal Setting and Career Development
	14.	Word Processing 1

Refer to individual modules for further information on module prerequisites and equipment requirements.

MODULE 1: INTRODUCTION TO COMPUTERS

Status: Core
Prerequisite: None

ose: To introduce the student to the fundamental terminology, concepts and basic programming skills necessary to the computer-literate business employee and citizen.

mmendation: That the student has a minimum keyboarding speed of 20 wpm on straight copy material prior to beginning work on the computer terminal or is presently enrolled in Typewriting 10.

"Hands-on" experience should account for at least 25% of the time spent in this module.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
finition of mputers	explain what a computer is	Fast Forward videotape series (ACCESS)
	describe the essential components and processes of a computer	
	describe the parts of a computer system and explain their interrelatedness	
reer Opportunities	examine computer-related career opportunities in the business environment and other areas of society	
story of Computer velopment	explain the evolution of computer technology	
	assess the impact of computer technology on society	
puter Applications	formulate a general overview of computer applications	
ormation Handling	identify computer applications for information processing in areas such as: medicine, law enforcement, agriculture, education, engineering, recreation, transportation, business, weather prediction, personal, household, and government	

TOPIC	LEARNING TASKS	TEACHING NOTES
Problem-Solving: Sequencing	contrast and compare computer processes to human thinking processes develop awareness of the methods and tasks of problem-solving sequence a simple task (e.g. alphabetize names, make coffee, etc.)	
Fundamental Machine Operations	use proper sign-on and sign-off procedures to gain access to the computer distinguish between immediate and deferred instruction modes demonstrate keying or loading of programs and display or print results interpret the exponential notations identify and key in fundamental system commands identify and use simple arithmetic functions understand the hierarchy of operations	
Preprogrammed Materials	manipulate the computer to respond to software prompts recognize the capabilities of the computer to manipulate data understand the relationship between problem-solving and programming identify the steps of the programming cycle: e.g., 1. identify and define the problem 2. program design 3. program coding 4. program testing 5. program documentation	software in the public domain (i.e File Cabinet)
Programming Techniques	write simple problem-solving programs illustrating input, process and output correctly run and list programs demonstrate simple graphics using cursor controls and screen-editing capabilities	

MODULE 1A: OVERVIEW OF INTRODUCTORY PROGRAMMING LANGUAGE

us: Core, when students have taken the Computer Literacy Option in Junior High School or can demonstrate equivalent skill and knowledge.

ose: To review the programming commands covered in Modules 1, 2, and 3.

mmendation: "Hands-on" experience should account for approximately 80% of the time spent on this module.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
rminology	demonstrate appropriate application of relevant computer-related terms	
rdware	understand the use of the various parts of the computer work station	
	explain the input/output and process functions with respect to the computer work station	
	demonstrate proper procedures for using the computer and the peripherals	
ftware	save, edit, and call back programs on disk or tape	
ogramming chniques	design, edit and run programs that incorporate the correct use of the following commands: RUN, LIST, REM, PRINT, READ/DATA, RESTORE, IF/THEN, GOTO, PRINT, INPUT, FOR/NEXT, STEP	
	use appropriate commands to run and list programs	
	incorporate format commands to control output on CRT such as PRINT, comma, semicolon	
	use step looping and branching commands efficiently	
	identify and manipulate variables	
gramming lications	code, debug, and document program	

MODULE 2: COMPUTERS AND SOCIETY

Status: Core
Prerequisite: Module 1

se: To examine and appreciate the economic, legal and ethical impact of computers on business and society and expand programming skills with emphasis on computer peripherals and information processing.

mendation: "Hands-on" experience should account for at least 60% of the time spent in this module.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
nomic Impact on iness and Society	describe situations in which a computer is useful and/or wasteful describe the advantages and recognize the problems inherent when government and business organizations depend on the computer	Film/Video Tape The Silicon Factor: So What's It All About. Film/Video Tape Good-Bye Gutenberg
al and Ethical trictions	understand the problems and penalties that result from the non-ethical use of information identify and describe the types of computer fraud recognize and respect the rights of others' files as private and personal property	Film/Video Tape The Silicon Factor: And What of the Future. Video Tape Business Computing Cut Down to Size (Part I)
minology	develop and use correct computer-related vocabulary (i.e. BIT, BYTE, RAM, ROM, OCR, UPC, MICR, CRT, VDU, Batch Processing, CPU, A/LU, Kilobyte) differentiate among file, record and field identify and manipulate the flow of information through the use of peripherals	
it Techniques	apply a programming language to code simple problems involving input/output, arithmetic and logical operations (for example, in BASIC use REM, READ/DATA, RESTORE, IF/THEN, GOTO, PRINT, INPUT) understand and use constants and numeric variables (real and integer) and string variables	

MODULE 3: PROGRAM DESIGN

Status: Core
Prerequisite: Module 2

se: To introduce proper programming techniques and to develop skill in progrm documentation, flowcharting, and input/output design.

mendation: "Hands-on" experience should account for at least 80% of the time spent in this module.

ment: Template

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
wcharting	identify the flowchart symbols and employ them correctly expand skills in problem-solving through flowcharting design solutions to problems using flowcharting symbols and structured programming demonstrate how to flowchart and program a computer to achieve a clearly-defined goal	
gram umentation	prepare a documentation package for more than one program consisting of a problem statement, a flowchart, a statement of use, a computer listing and a hard copy of the RUN (where applicable)	
gramming nniques	refine programming techniques by using looping statements, variables and step incrementing commands (i.e., in BASIC use, FOR/NEXT, STEP) design "user-friendly" programs	Video Tape Basic Training: Programming Small Computers (Part II)
ing Techniques	modify existing programs to achieve a clearly defined goal	
at Output	incorporate various format commands to control output on printer and CRT	
and De-Bug edures	test and de-bug programs	
iple and Nested s	write programs using multiple and nested loops incorporate succinct programming techniques	

TOPIC	LEARNING TASKS	TEACHING NOTES
Looping and Branching	solve problems using looping and branching (conditional and unconditional) techniques	
Editing Techniques	be able to modify program listings	
Output Techniques	be aware of various list and run system commands (e.g., LIST, RUN)	
	design and format on CRT output using format commands (e.g. in BASIC use, PRINT, comma, semicolon, REM, DATA, READ, IF THEN, GOTO)	Video Tape Basic Training: Programming Sm Computers (Part I). Note: The are workbooks to accompany thes tapes
	produce a hard copy of a program listing	

MODULE 4: OVERVIEW OF SOFTWARE

Status: Elective
Prerequisite: Module 3 or 1A

ose: To demonstrate and use commercially-prepared software packages.

mmendation: Menu-driven/command-key driven, user-oriented, pre-programmed software packages should be available for student use.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
rminology	understand and use appropriately terms related to hardware and software	Suggested Types of Software
gal Constraints to e of Software	understand and adhere to the legal constraints imposed by copyright	word processing spreadsheet calculators data base management accounting
oper Handling chniques	demonstrate proper handling and storage techniques for software	drill and practice simulations computer assisted instruction
	use and evaluate the documentation available for the software	
	recognize the limitations and potential of a particular piece of software	
pes of Software	distinguish between the various types of software; for example, computer-assisted instruction, and interactive software	
ftware Applications	develop awareness of the wide range in quality of commercially-prepared prepared software	
	understand some of the basic criteria for software evaluation	
	recognize effective procedures to obtain good commercially-prepared software	
porting Hardware figuration	recognize the hardware specifications necessary in order to use specific software packages	
tware-Use cedure	demonstrate commercially-prepared software packages	
	use the available software packages to solve assigned problems or complete assigned applications in an efficient manner	

MODULE 5: APPLICATIONS: DATA ENTRY

Status: Elective
Prerequisite: Module 3 or 1A

ose: To enable the student to develop skill in keyboarding and data entry as well as coding and manipulating data in the process of entering information into a computer.

mmend: Access to 10-Key Number Pad

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
evelop Keyboarding kill for Data Entry	develop touch techniques in alphabetic and numeric data input	keyboarding software data entry software
	develop editing skills	word processing software
	increase entry speed and accuracy through numeric and alphanumeric drills	
	demonstrate the importance of efficient, accurate handling of data entry tasks	
ding Data from urce Documents	understand the use of source documents frequently used in business (invoices, time cards, payroll, inventory, vouchers, etc.)	accounting software
	demonstrate the ability to code source documents appropriately	
neral Reporting	manipulate software to produce reports and summaries	
lationship to siness mmunication	demonstrate correct use of data entry terminology	
	appreciate the advantages of computerized data manipulation to the business world	
	differentiate between the data entry function and other forms of information input	
	develop awareness of the career opportunities using data entry skills	

MODULE 6: APPLICATIONS: WORD PROCESSING

Status: Elective
Prerequisite: Typewriting: Module 3
Computer Processing: Module 3 or 1A

ose: To enable the student to learn the procedures and operating commands of a word processing system on a microcomputer.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
lationship of Word ocessing to siness mmunication	explain and properly use word processing terminology	
	list and describe the advantages of word processing to the business office	
	differentiate between word processing and information processing	
	develop an awareness of the career opportunities available in word processing	
ing the Equipment	recognize and efficiently manipulate equipment configurations required for word processing	
rd Processing mmands	input information efficiently using appropriate keyboarding skills	
	output information on screen and/or printer using appropriate format commands	
tware Use ocedures	use editing and text manipulation commands in an appropriate manner	
	demonstrate ability to format documents suitably	
	understand the importance of and demonstrate proper file handling techniques	
d Processing lications	demonstrate integrated word processing skills through production of mailable materials	
	recognize the limitations of the software program and hardware configuration	

MODULE 7: APPLICATIONS: SIMULATIONS

Status: Elective
Prerequisite: Module 3 or 1A

ose: To enable the student to use the computer and appropriate software to simulate situations that help solve business-related problems.

mmendation: A choice of topic may be made from the following content areas or additional topics may be proposed by the student for approval by the teacher.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
fine Simulation	develop parameters for the scope of the simulation focus on an intended outcome for the simulation (solution to the problem) establish a plan and timeline to support the solution of the problem identify hardware/software necessary to support the simulation	
cus on Topic(s) thin Subject Area, OR erview Topics om Several Content eas, OR velop an Approved pic of Particular terest.	select from such topics as: Accounting Simulation 1. business cycles analysis 2. financial analysis 3. accounts receivable/accounts payable 4. practice sets 5. general ledger, trial balance 6. inventory control 7. job cost/payroll 8. depreciation 9. interest calculations 10. income statements/balance sheets Marketing Simulations 1. buying merchandise for resale 2. inventory control 3. discounts 4. pricing -- markups/markdowns 5. profit and loss statements 6. sales analysis 7. payroll calculations Business Management Simulation 1. taxation 2. stocks and bonds 3. interest calculations 4. business statistics 5. business economics	

TOPIC	LEARNING TASKS	TEACHING NOTES
	Business Mathematics 1. payroll calculations 2. interest calculations 3. mortgage 4. investments 5. banking 6. pricing 7. taxes	
Evaluate the Simulation	identify the positive aspects of the simulation relate and compare the simulation to similar activities in the business world identify the negative aspects of the simulation make recommendations as to how the simulation could have been improved	

MODULE 8: FUNDAMENTALS OF INPUT/OUTPUT

Status: Elective
Prerequisite: Module 3 or 1A

se: To expand the students' understanding of input/output techniques and communications hardware commonly used in information processing and to further expand programming skills using arrays and functions.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
ut/Output Devices	compare and contrast input and output devices and procedures explain the difference between batch processing and interactive processing systems	
ut Procedures	prepare and edit data for input processing	
ting Procedures	list recent developments in data entry and output technology produce quality output on various devices	
ring of Data	describe the manner in which the central processing unit manipulates and stores data	
a Communications	describe various types of data communication networks	
gramming lications	design, flowchart, write, test, de-bug and run several programs to solve various problems	
scripted Variables	write programs incorporating single and double subscripted variables	
rary and Machine ctions	utilize various library and machine functions available (arithmetic and string functions) use table handling and searching techniques to solve problems	

MODULE 9: INTRODUCTION TO ADVANCED COMPUTER PROGRAMMING TECHNIQUES

Status: Elective
Prerequisite: Module 8

ose: To develop advanced programming techniques and to refine skill in graphics programming.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
bering Systems	convert numeric symbols to the three numbering systems — decimal, binary and hexidecimal	
ofessional" gramming hniques	write programs that employ "professional" techniques found within the various commercially-prepared software packages review the principles of programming techniques and applications, and recognize the limitations of the programming language	
routines	examine and include various machine-specific (hardware dependent) subroutines and include them, where appropriate, in specific problem-solving activities (i.e., peek, poke)	
tiple Arrays	use data arrangements such as tables, matrices and arrays involving multiple subscripts to organize information	
h and Low olution Graphics	explain the difference between high-resolution and low-resolution graphics design output utilizing the graphics capabilities of the microcomputer employ graphic techniques and capabilities, at a fundamental level, in the creation of programs	

MODULE 10: ADVANCED COMPUTER PROGRAMMING TECHNIQUES

Status: Elective
Prerequisite: Module 9

se: To further expand the student's skill in computer programming through the study of file manipulation techniques.

TOPIC	LEARNING TASKS	TEACHING MOTES
	The student will:	
es of Files	identify the various types of files differentiate the uses of the various types of files	
e Handling	store and recall data in the various types of files through the use of pre-programmed, commercially-prepared software packages	data base management system spread sheet calculator system
a Base Management	identify the components of a data base; understand why they are necessary, and illustrate various methods of using them utilize pre-programmed, commercially-developed software packages to manipulate data base information	
ating Files	create simple examples of the various types of files	
ipulate Files	manipulate information using the various types of files	
ing Files	generate output using the various types of files employ various fundamental file manipulation techniques	

MODULE 11: EXTENDED PROGRAMMING PROJECT

Status: Elective
Prerequisite: Module 3 or 1A

se: To allow the student the opportunity to further demonstrate programming skills that integrate the student's personal background and interests.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
elop a Plan	develop a plan for a project that will require extensive and advanced programming skills	Some possible programs for school use: attendance mark processing school budget accounting system sports statistics inventory for equipment enrolments graphic representation of library, technical education lab
ument the Process	document the program suitably	
gram Development	develop a program that reflects the basic "user-friendly" criteria write the program in such a way that editing and modification is simplified	
dware and Software uirements	specify minimal and optimal hardware and software specifications	
luating the gram	prepare an evaluation summary indicating the limitations of the program and potential problem areas make recommendatins for improvements to the program	

MODULE 12: GRAPHICS

Status: Elective
Prerequisite: Module 3 or 1A

se: To provide an opportunity to enrich programming skills through the development of an ability to integrate graphics and sound into programs.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
lication of gramming	expand graphics programming skills; in BASIC use commands such as PLOT, POKE, and PRINT	
mands Generating phics	specify and manipulate vertical and horizontal lines	
n Resolution phics	understand the difference between low and high resolution graphics	
	develop various types of graphs	
	demonstrate the use of string graphics using dummy strings	
Resolution phics	define and explain what a pixel is and understand its use in graphics programming	
t Window	review the advanced graphics programming techniques use in an application such as games (stationary and moving targets)	
	write statements which will provide the print position for known X, Y coordinates	
	document graphics programs appropriately	
	use a video display sheet to plan graphic output	
hation	write and run a program to demonstrate animation processes	
r Commands	understand how color can be integrated into a computer program	
	use color to differentiate objects in a graphics display	
d Commands	understand how sound can be integrated into computer program to support the objective	

MODULE 13: SYSTEMS ANALYSIS AND PROGRAM DEVELOPMENT

Status: Elective
Prerequisite: Module 3 or 1A

ose: To understand the factors involved in systems analysis and develop the skills necessary to assess a complex problem and to solve that problem through the development of a program or set of programs that utilize a systematic approach.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
stems Analysis	describe the process required to develop a system which meets a set of program specifications	
	explain the necessity for structured programming as a communication device	
stems Design	demonstrate advanced flowcharting techniques in developing structured programming designs	
stems lementation	describe the procedures used in implementing a new system	
	research types of systems used in the business world	
gram umentation	prepare a documentation package for each program consisting of a problem statement, a flowchart, a computer listing, and a hard copy of the output	
gramming hniques	design and run menu-based programs, incorporating advanced programming instructions	
	de-bug program or system-related errors	

MODULE 14: INTRODUCTION TO SECOND (HIGH LEVEL) PROGRAMMING LANGUAGE

Status: Elective
Prerequisite: Module 3 or 1A

se: To provide the student with the opportunity to be introduced to a second (high level) programming language such as COBOL, Fortran, APL, Pascal, or COMOL-80.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
parison of guages	compare the advantages and disadvantages of the chosen high-level language with other languages recognize the most suitable applications for the language	
mware cifications	understand the hardware specifications required for the language application	
guage Syntax	demonstrate basic knowledge of correct syntax for programming language	
lications of Language	write simple programs in the chosen high-level language	
ification of grams	document programs suitably	
ug Programs	modify and debug existing programs in the chosen high-level language	
mat Output	demonstrate basic formatting skills in order to display and/or provide hard copy of the output	

MODULE 15: APPLICATIONS IN SECOND (HIGH LEVEL) PROGRAMMING LANGUAGE

Status: Elective
Prerequisite: Module 14

se: To encourage the student to consolidate understanding of the syntax of the second programming language through applying the language to the solution of business-related problems.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
lication of guage	complete the study of the language commands and syntax	
ify and Debug grams	code and debug programs utilizing the various language instructions	
guage Syntax	apply the proper syntax to the program understand the syntax for this language and compare it to that of the previously-learned programming language	
gram Documentation	document the programs using techniques suitable to that language	
at Output	develop skill in formatting output using a number of different methods	

MODULE 16: EXTENDED PROJECTS IN SECOND (HIGH LEVEL) LANGUAGE

Status: Elective
Prerequisite: Module 15

se: To allow the student the opportunity to further demonstrate second language programming skill.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
elop a Plan	develop a project plan that requires extensive and advanced programming skills	Programs which would be useful in the school might include areas such as: attendance mark processing school budget accounting system sports statistics inventory library technical education
ument the cess	document the program suitably	
gram Applications	develop a program that reflects "user-friendly" criteria	
	write the program in such a way that editing and modification is simplified	
dware and tware uirements	specify minimal and optimal hardware and software specifications	
luating the gram	prepare an evaluation summary indicating the limitations of the program and potential problem areas	
	make recommendations for improvements to the program	

MODULE 17: MACHINE/ASSEMBLY LANGUAGE

Status: Elective
Prerequisite: Module 3

se: To enable the student to further expand and refine his programming skills by utilizing the efficiency of the machine/assembly language commands.

TOPIC	LEARNING TASKS	TEACHING NOTES
	The student will:	
parison of guage	compare the advantages and disadvantages of various computer languages with machine language	The reference text should be specific to the microprocessor used.
rage Location dware figuration	construct assembly language instructions in the proper format using operation, input/output, and arithmetic/logical instructions	
ory Map	modify and/or debug existing assembly language programs	
embly Language tax	write and run an application subroutine to enhance the feature of an existing program	
ify and Debug grams	check the program for problems, accuracy and applicability and make appropriate improvements	
gram Applications	recognize the various applications particularly suitable for machine/assembly languages demonstrate ability to write a program in machine/assembly language	

LEARNING RESOURCES

The prescribed learning resources are:

McRitchie, M., Programming in Basic, Holt Rinehart and Winston of Canada Limited, Toronto, 1982. (Provides suitable support for the programming component in Modules 1, 2, 3, 8, 9.)

Shelley, Gary B., Cashman, Thomas J., Introduction to Computers and Data Processing, Anaheim Publishing Company, Brea, California, 1980. (Provides suitable support for the non-programming component in Modules 1, 2, 3, 8, 9, 10, 13. Appendices provide support in programming in BASIC, and, several advanced languages.)

Braun, Peter, Computer Projects, Pacific Learning Institute, Vancouver, 1981. (Provides suitable support for programming component in Modules 1, 2, 3, 8, 9, 10. Non-programming concepts are integrated. Includes Student Guide and Teacher's Guide. Sample solution programs are available on accompanying disk.)

*The recommended learning resources are:

McRitchie, M., Solutions Manuals for Programming in BASIC, Holt Rinehart and Winston of Canada Limited, Toronto, 1982.

Shelley, Gary B., Cashman, Thomas J., Student's Workbook and Study Guide to accompany Introduction to Computers and Data Processing, Anaheim Publishing Company, Brea, California, 1980. (Additional Instructor's Materials are available without charge including Instructor's Guide and Answer Manual, Transparency Masters, and Test Book.

*Additional recommended and supplementary resources may be approved in the 1983-84 school term.

CORRELATION OF COURSE CONTENT WITH LEARNING RESOURCES

Computer Processing Subject Strand

COURSE CONTENT	INTRO. TO COMPUTERS & DATA PROCESSING (SHELLY & CASHMAN)	PACIFIC LEARNING INST. COMPUTER PROJECTS PETER BRAUN	PROGRAMMING IN BASIC A COMPLETE COURSE MARGARET MCRITCHIE	REM
1. Introduction to Computers				
a) Definition of Computers	Ch. 1 - p. 1.1 - 1.30		Ch. 1	
b) Career Opportunities	Ch. 1 - p. 1.16, 1.17 Ch. 10 - p. 10.3			
c) History of Computer Development	Ch. 2 - p. 2.1 - 2.46		Ch. 1	
d) Computer Applications	Ch. 2 - p. 2.31 - 2.45 Ch. 3 - p. 3.13 - 3.23			
e) Information Handling	Ch. 3 - p. 3.13 - 3.23			
f) Problem-Solving -- Sequencing	Appendix A - p. A1 Ch.11 - p. 11.1 - 11.3		Ch. 2 - p. 20-22	
g) Fundamental Machine Operations		Project 1	Ch. 2 - p. 12-20	
h) Preprogrammed Materials	Workbook - p.1.13-1.15 " - p.2.13-2.14 " - p.3.15-3.18	Project 1		
i) Programming Techniques		Project 2 Project 2 Overheads	Ch. 2	
2. Computers and Society				
a) Economic Impact on Business and Society	Ch. 2 - p. 2.30-2.31			
b) Legal and Ethical Restrictions	Ch. 2 - p. 2.26-2.28			
c) Terminology	Ch. 1, 2, 3, 4, 5 Workbook P. 1.3, 1.4, 2.3, 2.4, 3.3, 4.3, 4.4, 5.3, 5.4.		Ch. 1, 2, 3	
d) Input Techniques	App. A - p. A.1-A.22	Project 2	Ch. 3	
e) Looping and Branching	App. A - p. A.1-A.36	Project 2	Ch. 4	
f) Editing Techniques			Ch. 2 - p. 14, 15	
g) Output Techniques	App. A - p. A.1-A.36	Project 2, 3	Ch. 2 - p. 24-34	

CORRELATION OF COURSE CONTENT WITH LEARNING RESOURCES

Computer Processing Subject Strand

OURSE CONTENT	INTRO. TO COMPUTERS & DATA PROCESSING (SHELLY & CASHMAN)	PACIFIC LEARNING INST. COMPUTER PROJECTS PETER BRAUN	PROGRAMMING IN BASIC A COMPLETE COURSE MARGARET MCRITCHIE	REMARKS
am Design				
owcharting	App. A - P. A.2, A.3, A.12, A.13, A.14 Ch.11 - p. 11.1-11.12	Project 2 Overheads	Ch. 2 - p. 20-23	
ogram Documentation	Ch.12 - p. 12.24-12.25		Ch. 2 - p. 17-19	
ogramming Techniques	App. A - p. A.1-A.36	Project 2 Overheads	Ch. 2, 3, 4, 5, 6	
iting Techniques			Ch. 2, 3, 4	
rmat Output	Workbook App. A - p. A.7, A.8	Project 3	Ch. 10	
st and De-Bug ocedures			Ch. 2 - p. 20	
ltiple and Nested ops	App. A - p. A.37-A.42		Ch. 5, 6	
iew of Software				References will be specific to available software.
ations: Data Entry	Ch. 1 - p. 1.16 Ch. 5 - p. 5.0-5.35			References will be specific to available software.
ations: Word sing	Ch. 3 - p. 3.14-3.15			References depend on software.
tions				References will depend on software.

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8. Fundamentals of Input/ Output				
a) Input/Output Devices	Ch. 5 - p. 5.1-5.35 Ch. 6 - p. 6.1-6.25		Ch. 3	
b) Input Procedures				
c) Editing Procedures	Ch. 5 - p. 5.32-5.33 Ch. 6 - p. 6.16-6.23		Ch. 3, 4, 5, 6	
d) Storing of Data	Ch. 4 - p. 4.1-4.20		Ch. 1 - p. 4, 5, 6	
e) Data Communications	Ch. 8 - p. 8.1-8.33			
f) Programming Applications	App. A - p. A.37, A.41, A.42 Workbook App. A - p. A.9, A.10			
g) Subscripted Variables	App. A - p. A.30-A.36	Project 6	Ch. 7, 8	
h) Library and Machine Functions	App. A - p. A.29-A.41 Workbook App. A - p. A.1-A.8	Project 3, 4	Ch. 9	
9. Introduction to Advanced Programming				
a) Numbering Systems	App. C - p. C.1-C.9		Ch.12 - p. 585-588	
b) "Professional" Programming Techniques				
c) Subroutines		Project 4	Ch.11 - p. 508-524	
d) Multiple Arrays		Project 6, 7	Ch. 8	
e) High and Low Resolution Graphics				

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anced Programming hniques				
ypes of Files	Ch. 7 - p. 7.1-7.22	Project 5		
ile Handling				
ata Base Management	Ch. 9 - p. 9.1-9.15			
reating Files		Projects 5, 7, 8, 9		
anipulate Files		Projects 5, 7, 8, 9		
diting Files		Projects 5, 7, 8, 9		
ended Projects in gramming				
phics				Graphics references should be specific to computer used.
ems Analysis and gram Development				
ystems Analysis	Ch.10 - p. 10.1-10.11			
ystems Design	Ch.10 - p. 10.12-10.26			
ystems Implementation	Ch.10 - p. 10.27-10.33			
rogram Documentation	Ch.11 - p. 11.1-11.33			
rogramming Techniques		Projects 5,6,7,8,9,10	Ch. 8, 9, 10, 11, 12	
nded Projects in ramming	Ch.12 - p. 12.1-12.33		Ch. 1 - p. 6,7,8,9	

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15. Applications in Second Language				
16. Extended Projects in Second Language				
17. Machine/Assembly Language				Reference match the processor

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